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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,820	02/27/2004	Stuart Butterworth	COHP-5040	6927

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EXAMINER	
FLORES RUIZ, DELMA R	

ART UNIT	PAPER NUMBER
2828	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/788,820	BUTTERWORTH ET AL.	
	Examiner	Art Unit	
	Delma R. Flores Ruiz	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

In response to Amendment filed 03/29/2007 the finality of the previous Office Action (03/05/2007) is hereby withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 – 6, 10 – 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salokatve et al. (6,327,293) in view of Karp et al. (2004/0238052)

Regarding claim 1, Salokatve discloses in Figures 1 and 2, an optically pumped semiconductor laser (see Fig. 1, Character 10) component, comprising: a multilayer structure including a mirror (see Fig. 1 Character 14) structure surmounted by a multilayer gain-structure (see Figs. 1, 2, Character 16); and at least a first heat conducting element (see Fig. 1, Character 32) having a high thermal conductivity and having first and second opposite surfaces, said heat-conducting element (see Fig. 1,

Character 32) via said first surface thereof to one of said mirror structure (see Fig. 1, Character 14) and said gain-structure (see Fig. 1, Character 16) and (Column 4, Lines 50 – 54).

Salokatve discloses the claimed invention except for pressure contact bonded without adhesive. However, it is well know in the art to apply the pressure contact bonded without adhesive as discloses by Karp in Paragraph [0124]. Therefore, it would have been obvious to a person having ordinary skill in the art to apply the well known as suggested by Karp to the laser of Salokatve, because use the directly bonded without using adhesive to provide high strength, which is especially desirable for high-pressure application and eliminate potential compatibility problems between such adhesive and is permanently bonded, Paragraph [0124] of Karp.

Regarding claim 2, Salokatve discloses in Figures 1 and 2, thermal conductivity of said first heat conducting element is greater than the thermal conductivity (Column 4, Lines 50 – 54).

Regarding claim 3, Salokatve discloses in Figures 1 and 2, said first heat conducting element (see Fig. 1, Character 32) is contact bonded (see Fig. 1, Character 31) to say mirror structure (see Fig. 1, Character 14).

Salokatve shown Figure 1

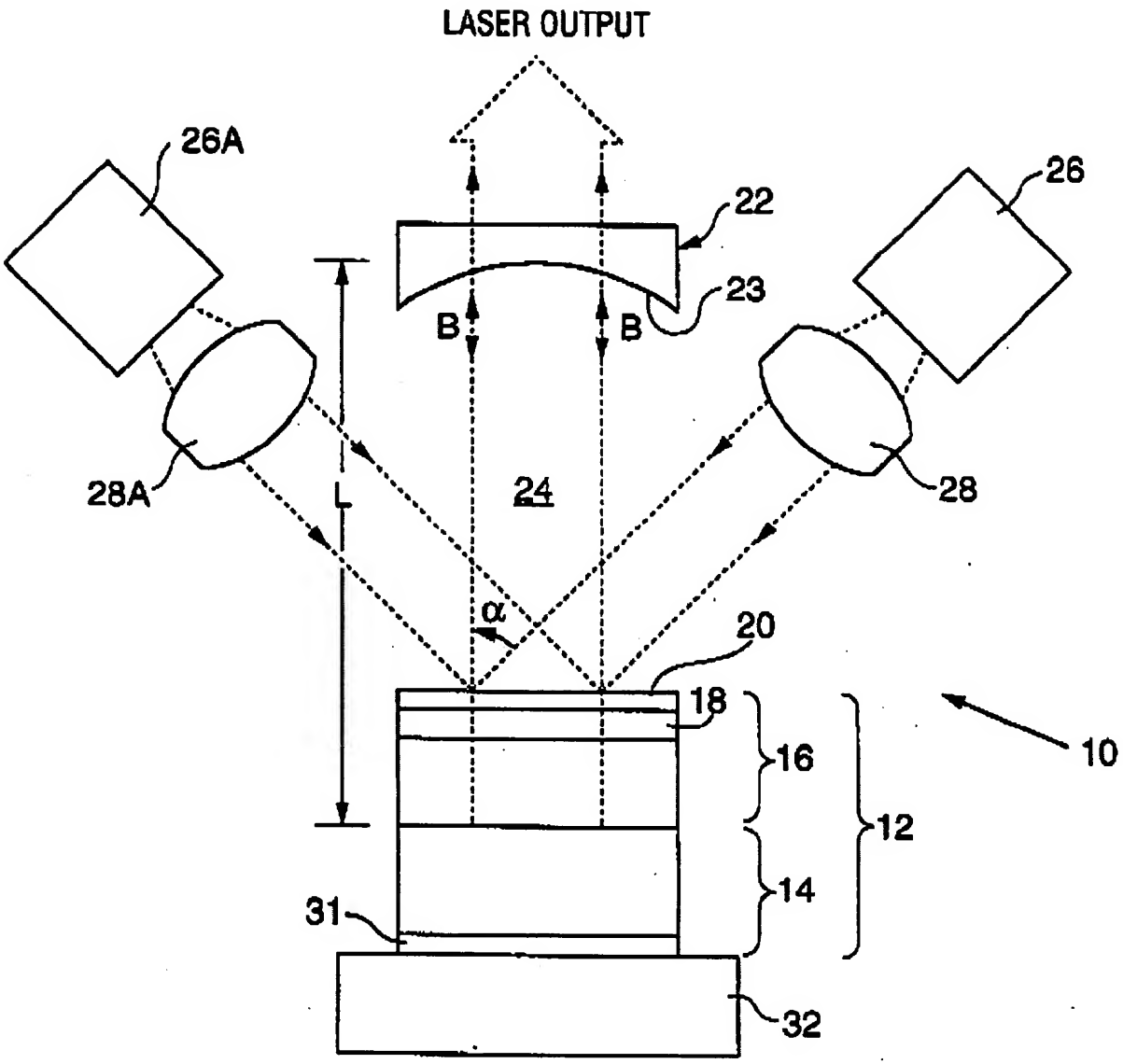

FIG. 1

Regarding claims 4 – 6, Salokatve discloses in Figure 2, mirror structure (see Fig. 2, Character 14) is a multilayer semiconductor and dielectric structure (see Fig. 2,

Characters 52 and 54) and mirror structure includes a metal layer and one or more dielectric layers (Column 3, Lines 50 – 54 and Column 6, Lines 47 - 67).

Regarding claim 10, Salokatve discloses in Figures 1 and 2, said first heat-conducting element (see Fig. 1, Character 32) is a diamond element (Column 7, Lines 30 – 31).

Regarding claim 11, Salokatve discloses in Figures 1 and 2, said second surface of said first heat-conducting element is in thermal contact with a heat sink (Column 4, Lines 50 – 54).

Regarding claim 13, Salokatve discloses in Figures 1 and 2, wherein said first surface of said first heat-conducting element (see Fig. 1, Character 32) is contact bonded to said gain-structure (see Fig. 1, Character 16).

Claim 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salokatve et al. (6,327,293) in view of Karp et al. (2004/0238052) further in view Zayhowski (5,386,427).

Regarding claim 9, Salokatve et al in view of Karp et al. discloses the claimed invention except for heat conducting element is one of diamond and sapphire element. However, it is well know in the art to apply the heat-conducting element is one of diamond and sapphire element as discloses by Zayhowski in Column 3, Lines 61 – 67. Therefore, it would have been obvious to a person having ordinary skill in the art to apply the well known heat conducting element is one of diamond and sapphire element as suggested by Zayhowski to the laser of Salokatve in view of Karp, because it is a good thermally conductive materials see Column 3, Lines 61 – 67 of Zayhowski.

Claims 7 – 8, 12 and 14, are rejected under 35 U.S.C. 103(a) as being unpatentable over Salokatve et al. (6,327,293) in view of Karp et al. (2004/0238052) further in view of Raymond et al. (6,393,038).

Regarding claims 7 – 8, 12 and 14, Salokatve in view of Karp discloses the claimed invention except for second heat conducting element and heat sink is a cooper heat sink. However, it is well know in the art to apply the second heat-conducting element as discloses by Raymond in Figure 1, character 30 and Column 7, Lines 29 – 47. Therefore, it would have been obvious to a person having ordinary skill in the art to apply the well-known second heat-conducting element as suggested by Raymond to

the optically pumped semiconductor laser of Salokatve in view of Karp because it will use second heat-conducting element (e.g. comprising copper) for temperature control and cooling see Column 7, Lines 30 – 32 of Raymond.

Salokatve discloses the claimed invention except for pressure contact bonded without adhesive. However, it is well know in the art to apply the pressure contact bonded without adhesive as discloses by Karp in Paragraph [0124]. Therefore, it would have been obvious to a person having ordinary skill in the art to apply the well known as suggested by Karp to the laser of Salokatve, because use the directly bonded without using adhesive to provide high strength, which is especially desirable for high-pressure application and eliminate potential compatibility problems between such adhesive and is permanently bonded, Paragraph [0124] of Karp.

Claims 15, are rejected under 35 U.S.C. 103(a) as being unpatentable over Salokatve et al. (6,327,293) in view of Karp et al. (2004/0238052) further in view of Raymond et al. (6,393,038) further in view Zayhowski (5,386,427).

Regarding claim 15, Salokatve in view of Bewley further in view of Raymond discloses the claimed invention except for heat conducting element is one of diamond and sapphire element. However, it is well know in the art to apply the heat conducting

element is one of diamond and sapphire element as discloses by Zayhowski in Column 3, Lines 61 – 67. Therefore, it would have been obvious to a person having ordinary skill in the art to apply the well known heat conducting element is one of diamond and sapphire element as suggested by Zayhowski to the laser of Salokatve in view of Karp further in view of Raymond, because it is a good thermally conductive materials see Column 3, Lines 61 – 67 of Zayhowski.

Claims 16 – 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salokatve et al. (6,327,293) in view of Karp et al. (2004/0238052) further in view of Pinneo (6,919,525).

Regarding claim 16 – 21, Salokatve discloses in Figures 1 and 2, an optically pumped semiconductor laser (see Fig. 1, Character 10) component, comprising: a multilayer structure including a mirror (see Fig. 1 Character 14) structure surmounted by a multilayer gain-structure (see Figs. 1, 2, Character 16).

Salokatve discloses the claimed invention except for pressure contact bonded without adhesive. However, it is well know in the art to apply the pressure contact bonded without adhesive as discloses by Karp in Paragraph [0124]. Therefore, it would have been obvious to a person having ordinary skill in the art to apply the well known as suggested by Karp to the laser of Salokatve, because use the directly bonded without using adhesive to provide high strength, which is especially desirable for high-pressure

application and eliminate potential compatibility problems between such adhesive and is permanently bonded, Paragraph [0124] of Karp.

Salokatve discloses the claimed invention except for heat spreader element and heat spreader element is formed for CVD diamond. However, it is well know in the art to apply the heat spreader element and heat spreader element is formed for CVD diamond as discloses by Pinneo in Column 4, Lines 18 – 25. Therefore, it would have been obvious to a person having ordinary skill in the art to apply the well know heat spreader element and heat spreader element is formed for CVD diamond as suggested by Pinneo to the optically pumped semiconductor laser of Salokatve in view or Bewley, because it's routinely sold for commercial applications ranging from cutting tools to heat spreaders. All diamond CVD processes to date have been characterized by very low process efficiency in terms of the amount of diamond produced in response to consumption of energy and synthesis materials. There has been a long-felt need within the CVD diamond industry to improve diamond CVD process efficiencies. This long felt need has given rise to vigorous prior but unsuccessful efforts to achieve significantly higher process efficiencies see Column 4, Lines 18 – 36 of Pinneo.

Response to Arguments

Applicant's arguments filed 12/11/2006 have been fully considered but they are not persuasive. Applicant's arguments with respect to claims 1 – 21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delma R. Flores Ruiz whose telephone number is (571) 272-1940. The examiner can normally be reached on M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Sun Harvey can be reached on (571) -272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Delma R. Flores Ruiz
Examiner
Art Unit 2828
DRFR/MH
April 17, 2007

Min Sun Harvey
Supervisor Patent Examiner
Art Unit 2828